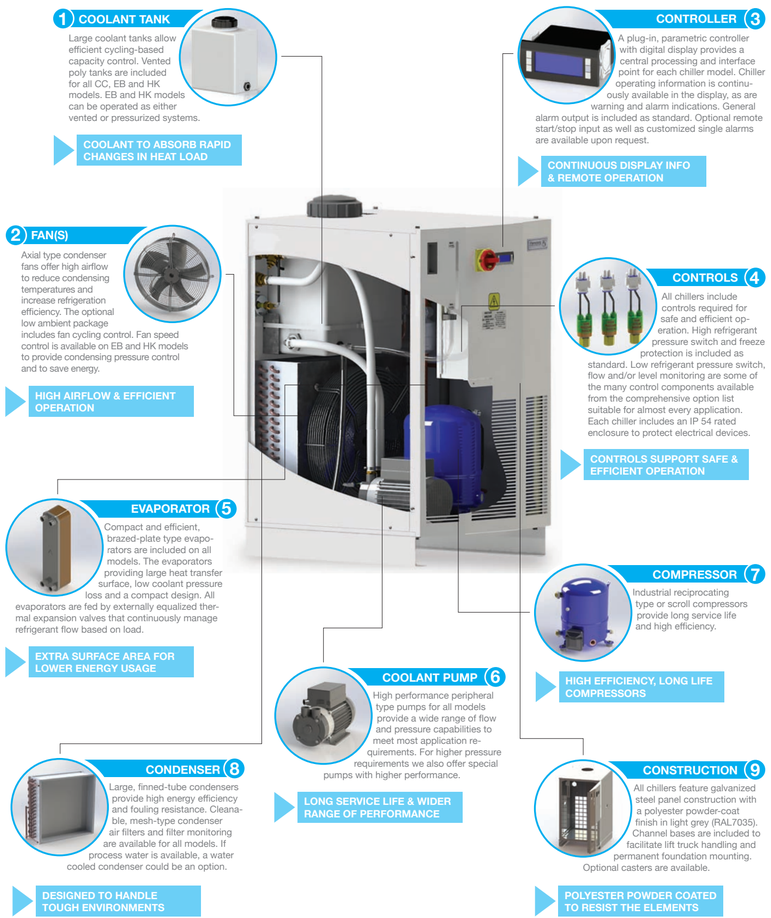
WHY CHOOSE A PACKAGED CHILLER SYSTEM?

Pfannenberg's packaged chillers are versatile and ideal for applications that have cooling requirements of 1.1 kW up to 70 kW. All chillers are shipped as factory packaged systems requiring only field power and piping to provide recirculated chilled coolant to virtually any process.

Pfannenberg's new CC Chillers are ideal for quick setup and trouble free operation.



1 COOLANT TANK

Large coolant tanks allow efficient cycling-based capacity control. Vented poly tanks are included for all CC, EB and HK models. EB and HK models can be operated as either vented or pressurized systems.

COOLANT TO ABSORB RAPID CHANGES IN HEAT LOAD

2 FAN(S)

Axial type condenser fans offer high airflow to reduce condensing temperatures and increase refrigeration efficiency. The optional low ambient package includes fan cycling control. Fan speed control is available on EB and HK models to provide condensing pressure control and to save energy.

HIGH AIRFLOW & EFFICIENT OPERATION

3 CONTROLLER

A plug-in, parametric controller with digital display provides a central processing and interface point for each chiller model. Chiller operating information is continuously available in the display, as are warning and alarm indications. General alarm output is included as standard. Optional remote start/stop input as well as customized single alarms are available upon request.

CONTINUOUS DISPLAY INFO & REMOTE OPERATION

4 CONTROLS

All chillers include controls required for safe and efficient operation. High refrigerant pressure switch and freeze protection is included as standard. Low refrigerant pressure switch, flow and/or level monitoring are some of the many control components available from the comprehensive option list suitable for almost every application. Each chiller includes an IP 54 rated enclosure to protect electrical devices.

CONTROLS SUPPORT SAFE & EFFICIENT OPERATION

5 EVAPORATOR

Compact and efficient, brazed-plate type evaporators are included on all models. The evaporators providing large heat transfer surface, low coolant pressure loss and a compact design. All evaporators are fed by externally equalized thermal expansion valves that continuously manage refrigerant flow based on load.

EXTRA SURFACE AREA FOR LOWER ENERGY USAGE

6 COOLANT PUMP

High performance peripheral type pumps for all models provide a wide range of flow and pressure capabilities to meet most application requirements. For higher pressure requirements we also offer special pumps with higher performance.

LONG SERVICE LIFE & WIDER RANGE OF PERFORMANCE

7 COMPRESSOR

Industrial reciprocating type or scroll compressors provide long service life and high efficiency.

HIGH EFFICIENCY, LONG LIFE COMPRESSORS

8 CONDENSER

Large, finned-tube condensers provide high energy efficiency and fouling resistance. Cleanable, mesh-type condenser air filters and filter monitoring are available for all models. If process water is available, a water cooled condenser could be an option.

DESIGNED TO HANDLE TOUGH ENVIRONMENTS

9 CONSTRUCTION

All chillers feature galvanized steel panel construction with a polyester powder-coat finish in light grey (RAL7035). Channel bases are included to facilitate lift truck handling and permanent foundation mounting. Optional casters are available.

POLYESTER POWDER COATED TO RESIST THE ELEMENTS

SPECIFICATIONS

Model	Cooling capacity [1]	Power supply	Flow rate	Pump pressure	Tank volume	Control range	Dimensions
	W	V / Hz	l/min	bar	l	°C	(HxWxD) mm
CC 6101	1100	230 1~ 50/60	12	3	10	+ 10 ... + 35	626 x 600 x 480
CC 6201	1700	230 1~ 50/60	12	3	10	+ 10 ... + 35	626 x 600 x 480
CC 6301	2400	230 1~ 50/60	12	3	10	+ 10 ... + 35	626 x 600 x 480
CC 6401	3500	400 3~ 50 / 460 3~ 60	22	3	30	+ 10 ... + 35	984 x 601 x 670
CC 6501	5000	400 3~ 50 / 460 3~ 60	22	3	30	+ 10 ... + 35	984 x 601 x 670
CC 6601	6500	400 3~ 50 / 460 3~ 60	22	3	30	+ 10 ... + 35	984 x 601 x 670
EB 30 WT	3000	400 3~ 50 / 460 3~ 60	14	2.5	30	+ 10 ... + 35	955 x 550 x 600
EB 43 WT	4300	400 3~ 50 / 460 3~ 60	14	2.5	30	+ 10 ... + 35	955 x 550 x 600
EB 60 WT	6000	400 3~ 50 / 460 3~ 60	20	3	50	+ 10 ... + 35	955 x 550 x 600
EB 75 WT	7500	400 3~ 50 / 460 3~ 60	35	3	50	+ 10 ... + 35	1337 x 705 x 750
EB 90 WT	9000	400 3~ 50 / 460 3~ 60	35	3	50	+ 10 ... + 35	1337 x 705 x 750
EB 130 WT	13000	400 3~ 50 / 460 3~ 60	35	3	50	+ 10 ... + 35	1337 x 705 x 750
EB 150 WT	15000	400 3~ 50 / 460 3~ 60	35	3	50	+ 10 ... + 35	1337 x 705 x 750
EB 190 WT	19000	400 3~ 50 / 460 3~ 60	50	3	70	+ 10 ... + 35	1410 x 1230 x 790
EB 250 WT	25000	400 3~ 50 / 460 3~ 60	50	3	265	+ 10 ... + 35	1410 x 1230 x 790
EB 300 WT	30000	400 3~ 50 / 460 3~ 60	80	3.5	400	+ 10 ... + 35	1410 x 1680 x 790
EB 350 WT	35000	400 3~ 50 / 460 3~ 60	80	3.5	265	+ 10 ... + 35	1410 x 1680 x 790
EB 400 WT	40000	400 3~ 50 / 460 3~ 60	80	3.5	400	+ 10 ... + 35	1410 x 1680 x 790
PWW 9.000	9000	230 1~ 50/60	20	3	–	+ 10 ... + 35	500 x 580 x 580
PWW 12.000	12000	230 1~ 50/60	25	3	–	+ 10 ... + 35	500 x 580 x 580
PWW 18.000	18000	400 3~ 50 / 460 3~ 60	35	3	–	+ 10 ... + 35	500 x 580 x 580
PWW 24.000	24000	400 3~ 50 / 460 3~ 60	50	3	–	+ 10 ... + 35	500 x 580 x 580
HK 55 WT	55000	400 3~ 50 / 460 3~ 60	160	3	300	+ 10 ... + 35	1800 x 2500 x 1110
HK 62 WT	62000	400 3~ 50 / 460 3~ 60	160	3	300	+ 10 ... + 35	1800 x 2500 x 1110
HK 70 WT	70000	400 3~ 50 / 460 3~ 60	160	3	300	+ 10 ... + 35	1800 x 2500 x 1110

[1] water @ 18 °C CWS / 32 °C ambient / 50 Hz for models CC, EB and HK --- Δt = 5 K (primary in/secondary out) for PWW
Air cooled condenser for the models CC, EB and HK

APPLICATION EXAMPLES

Automotive (Manufacturing)	Food & Beverage	Renewable Energy
Spindle Motor Cooling – High speed spindles need continuous cooling to ensure accuracy and motor life. Temperature control of the tooling is required for high precision cutting applications.	**Mold Cooling (Injection, Thermoforming, Blow Molding)** – Plastic molding involves melting (heating) the material to allow it to take the shape of the mold and then solidifying (cooling) it before the mold is opened so the shape is maintained. The use of chilled water allows rapid cooling of the molds between heating cycles in this high speed process.	**Solar Inverter Cooling** – Power inverters are used to convert the DC power created by solar collectors to the AC power that can be transferred to the power grid. Inverters lose up to 3% of their rated capacity in the form of heat and liquid cooling provides reliable thermal management to keep this renewable energy source on line.
Cutting Oil Cooling – Temperature control of the work piece in machining applications is needed to control dimensions. Chillers provide cooling of the recirculated and filtered cutting oil.	**Baking Process Cooling** – Control for baking processes are normally subjected to the high air temperature and flour-laden environment of the oven system. Cooling control enclosures with chilled water keeps process controls operating in these "hostile" areas.	**Hydrogen Fuel Cell Compressor Cooling** – A by-product of raising the pressure of hydrogen gas for use in fuel cell "engines" is the heat associated with compression. Recirculated chilled water manages the temperature of the both the hydrogen gas and the mechanical compressor.
Hydraulic Oil Cooling – Hydraulic power systems are often the primary driver in manufacturing processes. The heat added to the oil by the hydraulic pump is removed by the chiller either directly, or through an intermediate heat exchanger.	**Glass Inspection Camera Cooling** – The inspection of glass bottles takes place in immediate proximity to this extreme high temperature process. Inspection cameras include a liquid cooled housing that protects the sensitive optics.	**Storage Battery Cooling** – Heat is created in the electrochemical process associated with the storage of electrical energy. Maintaining the temperature of the cells by removing this heat increases the overall efficiency of the storage system. Liquid cooling provides a convenient solution regardless of ambient conditions.
Automation Control Cooling		
Variable frequency drives (VFDs) are used to precisely control the motion in highly automated manufacturing and packaging processes. VFDs can lose up to 3% of their rated capacity in the form of heat, so the enclosures that house them must be continuously cooled. As these enclosures are usually located close to the process machinery, cooling with recirculated liquid provided by a Pfannenberg packaged chiller offers an efficient, low maintenance solution regardless of the process environment.		

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PACKAGED CHILLER SOLUTIONS

Closing the loop for all industrial fluid cooling applications

SHARING COMPETENCE

Pfannenberg
ELECTRO-TECHNOLOGY FOR INDUSTRY

SELECTING THE CORRECT PFANNENBERG CHILLER

Use the chart below to help you select the proper chiller for your application. For questions please consult with the factory or visit our website for the latest charts, diagrams, drawings and sizing materials and PSS software.

STEP 1
WHAT IS THE HEAT LOAD?

Determine the heat load. There are several ways to determine the heat load depending on the application. Understanding the process is essential to calculating an accurate heat load.

STEP 2
COOLANT TYPE, TEMPERATURE & FLOW RATE

Determine the coolant, its target temperature and the flow rate that the chiller must provide to the process. This is determined by the method from which the heat is transferred from the process to the coolant and the type of coolant being used. For example, water has different characteristics than oil.

STEP 3
IDENTIFY INSTALLATION ENVIRONMENT

In what environment will the chiller be installed? Indoor applications for example can see high temperatures and dirty atmospheres, while outdoor installations can experience both low and high ambient temperatures. This can effect chiller sizing and require accessories such as air filters, crank-case heaters, etc.

STEP 4
USE CHILLER PERFORMANCE CURVES

Now use the chiller performance curves available* to select a chiller model that meets or exceeds the required capacity based on the chilled water supply temperature and the highest expected ambient air temperature. Consideration should be given to the safety margin of the application with respect to available frame sizes to maximize the value of the chiller selection.

*Consult factory or website for current curve data.

STEP 5
CHECK PUMP PERFORMANCE CURVES

Check the pump performance curves available* to ensure that the pump will provide enough pressure at the design flow rate to satisfy the application. Some liquid cooled systems have small coolant flow paths or longer distances that can have higher than average pressure losses.

*Consult factory or website for current curve data.

STEP 6
FINAL SELECTION

Finally, consider that the remaining application requirements such as power characteristics, control options, footprint, distributors, colour, etc. are met by the selected standard Pfannenberg chiller. Choosing a standard chiller will bring you greater reliability, easier service with common spare parts and global support.

PFANNENBERG COMPACT PACKAGED CHILLERS

CC 6101-6601

UP TO 6.5 KW

Compact and efficient, the CC line offers many features found only in larger models. Ease of operation and service is immediately evident from the fully-hinged front access panel and removable side panels, to the large coolant fill port and tank sight gauge.

- Serial produced compact packaged chiller (CC) certified to UL1995
- Rugged construction for industrial use, using non-ferrous coolant circuits with vented poly tanks
- Indoor/outdoor-rated IP 54 standard panel
- Service friendly design allows access via a hinged front panel and removable side panels
- For cooling water or water/glycol mixtures
- Many optional features including louvred stainless steel casings

PFANNENBERG PACKAGED CHILLERS

EB 30-400 WT

UP TO 40 KW

Up to the EB 400 the unique modular design packages the coolant circulation and storage part of the chiller in the bottom section and the refrigeration system in the upper section.
This arrangement allows warm air from the condenser to be discharged conveniently upward and allows the chiller to maintain a small footprint.

- Non-ferrous coolant circuits with vented poly tanks are standard
- UL508a certification on request
- Dual usage possible, e.g. 400 V 50 Hz and 460 V 60 Hz
- Pressure rated coolant tanks for operation in either closed or open loop systems
- More than 30 standard options to meet nearly every application requirement, e.g. water cooled condenser

PFANNENBERG PASSIVE WATER COOLERS

PWW 9.000-24.000

UP TO 24 KW

The PWW series is a new generation of cooling units based on the passive cooling principle. It has been specially designed for applications where process water is already available. Due to the smart design of the closed loop circuit the PWW can be easily adapted to the existing water supply.

- Closed loop system
- UL508a certification on request
- Primary water regulation via 3-way valve
- Programmable controller

PFANNENBERG PACKAGED CHILLERS

HK 55-70 WT

UP TO 70 KW

The rugged design of the HK series has been developed for indoor and outdoor applications for the cooling of water, oil and emulsions.

- Particularly suitable for outdoors and aggressive environmental conditions
- Many standard options available
- UL508a certification on request

ENCLOSURE THERMAL MANAGEMENT & INDUSTRIAL ELECTRONICS COOLING SOLUTIONS FOR OVER 60 YEARS

HEAT EXCHANGERS
solution selling

SERVICE
for your individual service package please consult us

SETUP
which means commissioning and installation

PSS
Pfannenberg Software Service